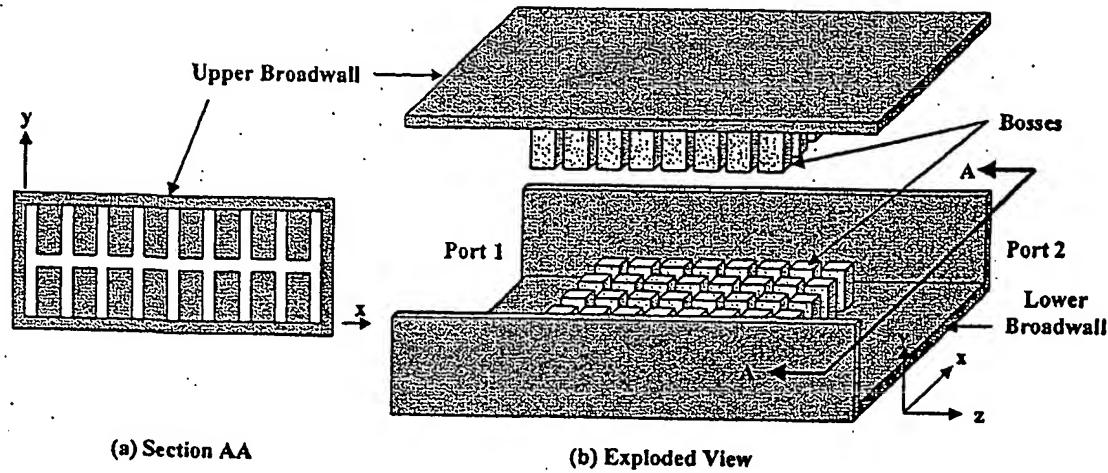




Replacement Drawings

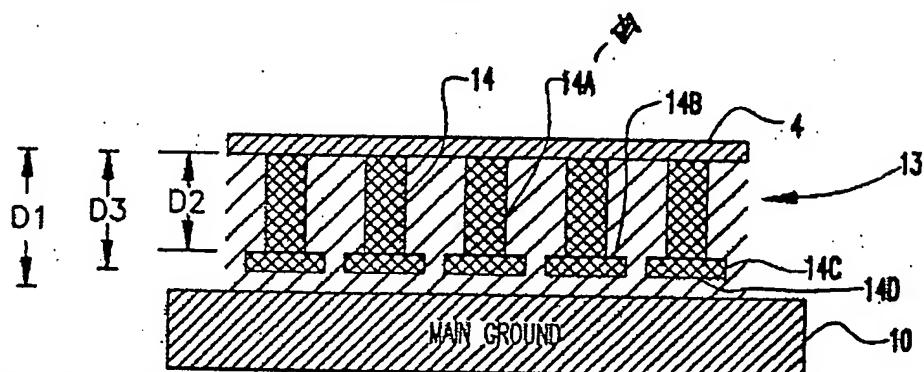
Title: System and Methods For Blocking Microwave Propagation in Parallel Plate Structures Utilizing Cluster Vias
Serial No. 10/828,542 - filed: 04/19/04
Inventor: McKinzie
Docket No. 42372-0004
1/16



Waffle-Iron Waveguide Filter: (a) view looking into port 2, (b) exploded view.

Prior Art

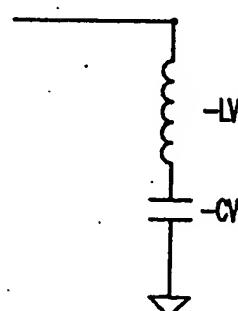
FIG. 1



Examples of resonant vias from Riad's US patent 5,886,597.

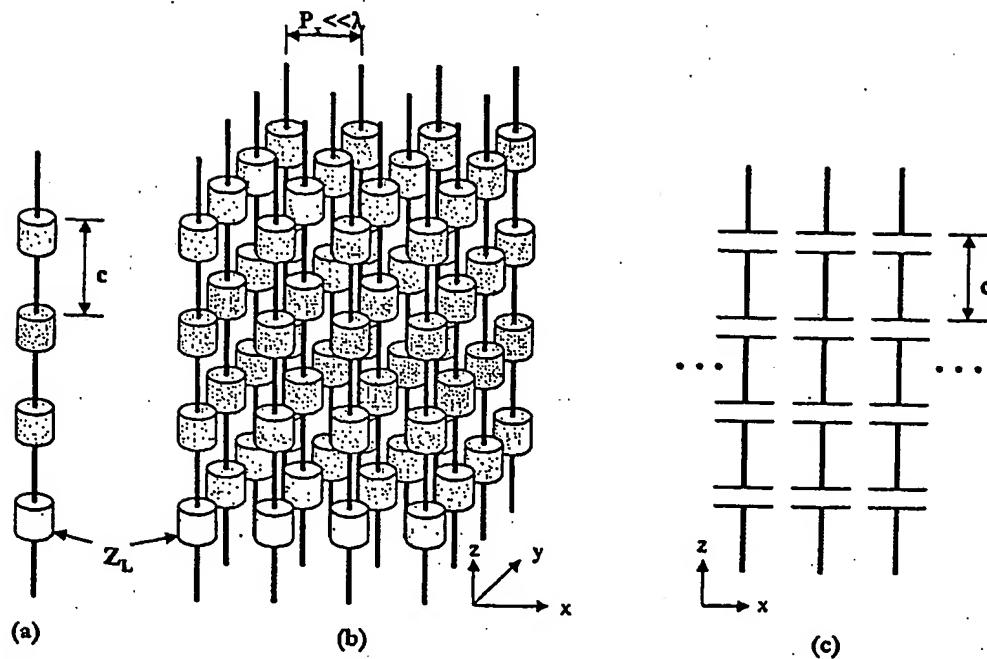
Prior Art

FIG. 2



Prior Art

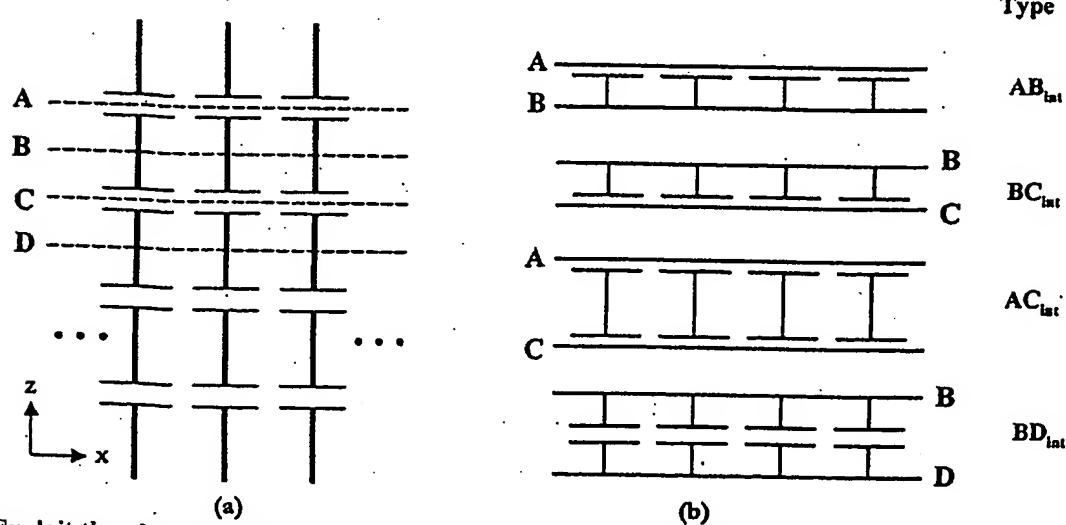
FIG. 3



The starting point for the derivation of new inventions is the loaded wire media: (a) a single wire with uniform periodic series loads, (b) a rectangular array of loaded wires, (c) loads are now defined as parallel-plate capacitors.

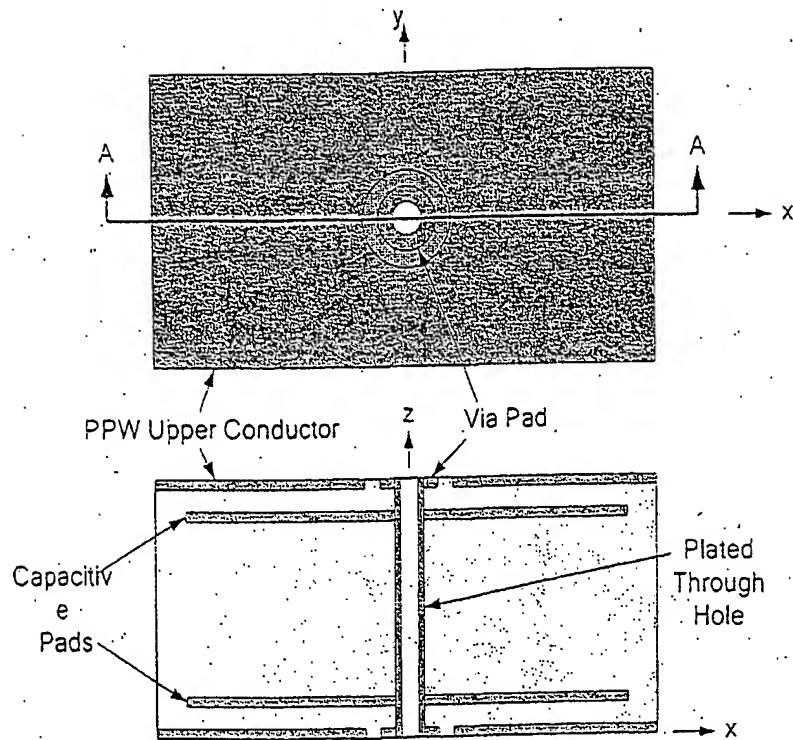
Prior Art

FIG. 5



Exploit the planes of physical symmetry to obtain electromagnetically equivalent structures: (a) the infinite wire media, (b) PPW structures of finite height. The supporting dielectric structure is not shown.

FIG. 6



Plated through holes may be used in the fabrication of resonant vias as illustrated here for an internal I resonant via.

FIG. 21

	Mechanically-Unbalanced	Mechanically-Balanced
Internal	Internal "T"	Internal "double T" Internal "I"
External	External "T"	External "I"
Hybrid		Hybrid "T"

Examples of fundamental resonant cluster via types consisting of two or more vias connected in parallel.. Dielectric layers required for support are not shown.

FIG. 22